

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. **(currently amended)** A rare earth ion ultrashort laser source ~~including on the one hand comprising:~~

a resonant cavity (1) having a first output face (2) partially reflecting and a second reflecting face (3), and ~~on the other hand~~

a first active material (4), placed inside the resonant cavity, ~~said first active material~~ having a saturation fluency greater than 3 J/cm^2 and receiving a pump luminous flux (5), ~~said pump luminous flux~~ being transmitted by a first solid laser pump source (7), ~~said first solid laser pump source~~ transmitting luminous pulses having an energy E_L ,

~~characterised in that wherein:~~

- the resonant cavity (1) exhibits a length of optical path travelled by ~~said luminous pulses~~ greater than ~~7,57.5~~ m so that the pulsed energy E_L is greater than 100 nJ, ~~said optical path~~ including at least one passage in ~~said first active material (4)~~,

- the ultrashort laser source comprises ~~means~~ ~~a member~~ for lengthening the resonant cavity (1) thereby ~~enabling~~ ~~to extend~~ ~~extending~~ the length of the optical path travelled by ~~said~~

luminous pulses in the resonant cavity (1) of a ~~compact~~ said ultrashort laser source,

~~- the resonant cavity (1) comprises an ABCD propagation matrix of said resonant cavity (1) being that is close to the a unit matrix so that the features of the luminous beam pulses going back and forth in the resonant cavity (1) remain unchanged.~~

2. (currently amended) ~~An~~ The ultrashort laser source according to claim 1, ~~characterised in that~~ wherein the length of said optical path ranges between 7.5 m and 300 m.

3. (currently amended) ~~An~~ The ultrashort laser source according to claim 1, ~~characterised in that~~ the means for elongating wherein said member for lengthening the cavity (8) include includes at least one device ~~for elongating the cavity (8) including~~ having at a first end a first planar mirror (9) and at the other end a second planar mirror (10), said first and second planar mirrors (9, 10) being placed respectively at the respective focus of a first and second concave spherical mirrors (11, 12), said second planar mirror (10) having a normal axis at its surface tilted vertically by an angle θ/n with respect to a plane parallel to the plane containing the first planar mirror (9) so that a luminous pulse entering said device (8) under an angle of incidence θ in a vertical plane and under an angle Φ in a horizontal plane, with respect to the normal at the surface of

the first planar mirror (9) is subjected to n/2 reflections on the second spherical mirror (10) before exiting said device.

4. **(currently amended)** An The ultrashort laser source according to claim 3, characterised in thatcomprising an input mirror, situated at thea front end and spaced away from the first spherical mirror (11) that enables injecting and ejecting said luminous pulses in the device for elongating the cavity.

5. **(currently amended)** An The ultrashort laser source according to claim 1, characterised in thatwherein the first solid laser source comprises at least one second active material (5) placed inside the resonant cavity (1), said second active material (5) receiving a pump luminous flux (14).

6. **(currently amended)** An The ultrashort laser source according to claim 5, characterised in thatwherein said pump luminous flux (14) received in said second active material is transmitted via a second solid laser pump source (15).

7. **(currently amended)** An The ultrashort laser source according to claim 15, characterised in thatwherein the number of passages travelled by said luminous pulses in eachsaid first active materialmaterials (4,5) is greater than or equal to 2.

8. **(currently amended)** An The ultrashort laser source according to claim 7, characterised in thatwherein the number of passages travelled by said luminous pulses in eachsaid first and second active materialmaterials (4, 5) is equal to 4.

9. **(currently amended)** An The ultrashort laser source according to claim 7, characterised in thatit comprisesfurther comprising a dichroic mirror (13) placed between said active first and second active materialsmaterial (4, 5) and the corresponding solid laser pump source sources (7, 15), said dichroic mirror receiving the luminous pulses from said first and second active materialmaterials (4, 5) and reflecting said luminous pulses towards the said first and second active materialmaterials (4, 5).

10. **(currently amended)** An The ultrashort laser source according to claim 1, characterised in thatwherein the first solid laser pump source (15) is a semiconductive laser.

11. **(currently amended)** An The ultrashort laser source according to claim 1, characterised in that said first active material (4, 5) comprises ytterbium ions.

12. (currently amended) An The ultrashort laser source according to claim 45, characterised in that wherein said first active material (4, 5) comprises neodymium ions.

13. (cancelled)

14. (currently amended) An The ultrashort laser source according to claim 2, characterised in that wherein the means member for elongating lengthening the cavity include includes at least one device for elongating lengthening the cavity (8) including having at a first end a first planar mirror (9) and at the other end a second planar mirror (10), said first and second planar mirrors (9, 10) being placed respectively at the respective focus of a first and second concave spherical mirrors (11, 12), said second planar mirror (10) having a normal axis at its surface tilted vertically by an angle θ/n with respect to a plane parallel to the plane containing the first planar mirror (9) so that a luminous pulse entering said device (8) under an angle of incidence θ in a vertical plane and under an angle Φ in a horizontal plane, with respect to the normal at the surface of the first planar mirror (9) is subjected to $n/2$ reflections on the second spherical mirror (10) before exiting said device.

15. (currently amended) An The ultrashort laser source according to claim 2, characterised in that the laser source

further comprising comprises at least one second active material (5) placed inside the resonant cavity (1), said second active material (5) receiving a pump luminous flux (14).

16. (currently amended) An The ultrashort laser source according to claim 3, characterised in that the laser source comprisesFurther comprising at least one second active material (5) placed inside the resonant cavity (1), said second active material (5) receiving a pump luminous flux (14).

17. (currently amended) An The ultrashort laser source according to claim 4, characterised in that the laser source comprisesFurther comprising at least one second active material (5) placed inside the resonant cavity (1), said second active material (5) receiving a pump luminous flux (14).

18. (currently amended) An The ultrashort laser source according to claim 8, characterised in that it comprisescomprising a dichroic mirror (13) placed between said first and second active material materials (4, 5) and the corresponding solid laser pump source sources (7, 15), said dichroic mirror receiving the luminous pulses from said first and second active material materials (4, 5) and reflecting said luminous pulses towards the said first and second active material materials (4, 5).

19. (new) The ultrashort laser source according to claim 3, wherein n is the number of passages of the luminous pulses in the vertical plane of the at least one device (8) before exiting through the same path.

20. (new) The ultrashort laser source according to claim 14, wherein n is the number of passages of the luminous pulses in the vertical plane of the at least one device (8) before exiting through the same path.